

PQ20VZ51J00H

PQ20VZ11J00H

Variable Output, Surface Mount Type
Low Power-Loss Voltage Regulators

■ Features

1. Low power-loss
(Dropout voltage: MAX. 0.5V)
2. Surface mount package
3. Output current (0.5A: PQ20VZ51J00H)
(1.0A: PQ20VZ11J00H)
4. Reference voltage precision: $\pm 2.0\%$
5. Variable output voltage (1.5 to 20V)
6. Built-in ON/OFF control function
7. Low dissipation current at OFF-state (I_{qs} : MAX. 5 μ A)
8. RoHS directive compliant

■ Applications

1. Car audio
2. VTR

■ Model Line-up

Output current (I_o)	Package type	Variable output
0.5A	Taping	PQ20VZ51J00H
	Sleeve	PQ20VZ51J00H
1A	Taping	PQ20VZ11J00H
	Sleeve	PQ20VZ11J00H

■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	24	V
ON/OFF control terminal voltage	V_C	24	V
*1 Output adjustment terminal voltage	V_{ADJ}	7	V
Output current	I_o	0.5	A
		1	
*2 Power dissipation	P_D	8	W
*3 Junction temperature	T_j	150	°C
Operating temperature	T_{opr}	-25 to +80	°C
Storage temperature	T_{stg}	-40 to +150	°C
Soldering temperature	T_{sol}	260(10s)	°C

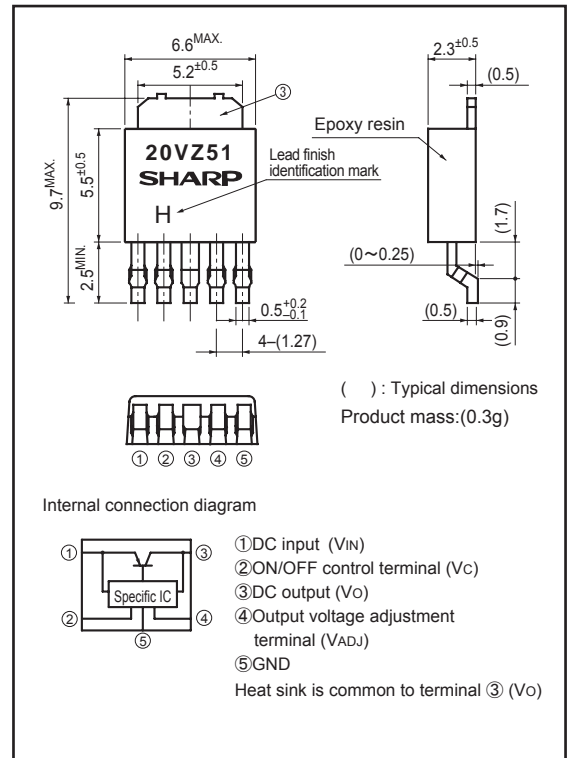
*1 All are open except GND and applicable terminals.

*2 P_D : With infinite heat sink

*3 Overheat protection may operate at T_j : 125°C to 150°C

■ Outline Dimensions

(Unit : mm)



Lead finish: Lead-free solder plating
(Composition: Sn2Cu)

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Electrical Characteristics

(Unless otherwise specified, condition shall be $V_{IN}=12V, V_O=10V$, *4, $R_1=1k\Omega, V_C=2.7V, T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	$V_O=1.5V$	4.5	-	24	V
Output voltage	V_O	-	1.5	-	20	V
Load regulation	Reg_L	*5	-	0.2	2.0	%
Line regulation	Reg_I	$V_{IN}=11 \text{ to } 21V, I_O=5mA$	-	0.2	2.5	%
Ripple rejection	RR	Refer to Fig.2	45	60	-	dB
Reference voltage	V_{ref}	*4	1.225	1.25	1.275	V
Temperature coefficient of reference voltage	$T_C V_{ref}$	$T_j=0 \text{ to } +125^\circ C, I_O=5mA$	-	± 1.0	-	%
Dropout voltage	V_{I-O}	*4, *6	-	0.2	0.5	V
Quiescent current	I_q	$I_O=0A$	-	4	7	mA
ON-state voltage for control	$V_{C(ON)}$	-	2.0	-	-	V
ON-state current for control	$I_{C(ON)}$	-	-	-	200	μA
OFF-state voltage for control	$V_{C(OFF)}$	$I_O=0A$	-	-	0.8	V
OFF-state current for control	$I_{C(OFF)}$	$V_C=0.4V, I_O=0A$	-	-	2.0	μA
Output OFF-state consumption current	I_{qs}	$V_C=0.4V$	-	-	5.0	μA

*4 PQ20VZ51J00H: $I_O=0.3A$, PQ20VZ11J00H: $I_O=0.5A$

*5 PQ20VZ51J00H: $I_O=5mA$ to $0.5A$, PQ20VZ11J00H: $I_O=5mA$ to $1.0A$

*6 Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

Fig.1 Test Circuit

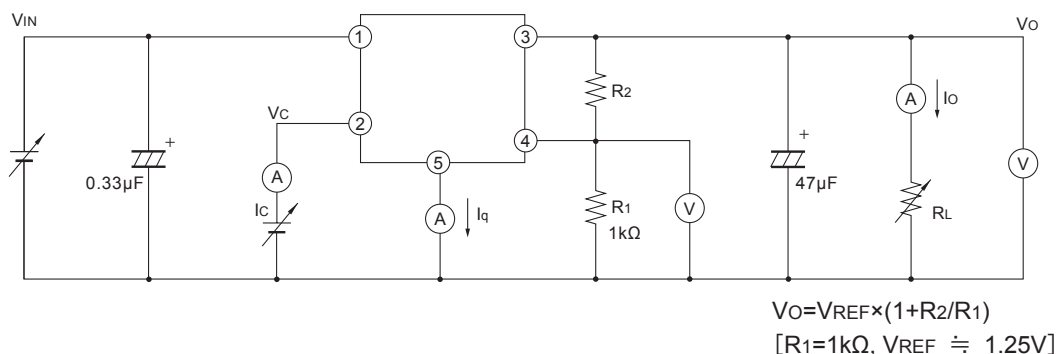


Fig.2 Test Circuit for Ripple Rejection

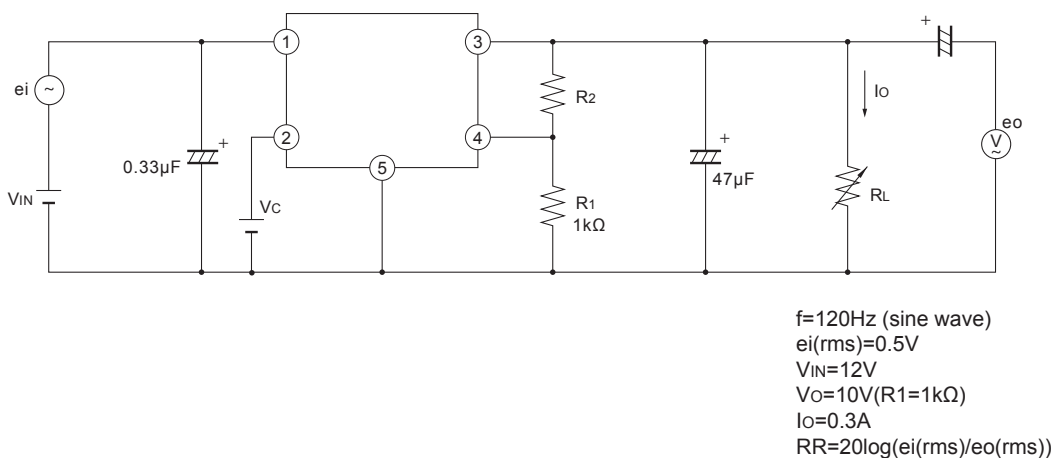
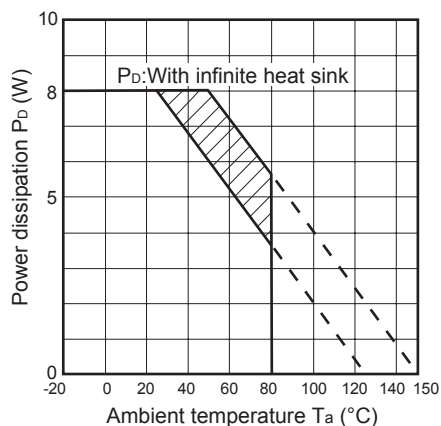


Fig.3 Power Dissipation vs. Ambient Temperature



Note) Oblique line portion: Overheat protection may operate in this area.

Fig.4 Overcurrent Protection Characteristics (Typical Value)

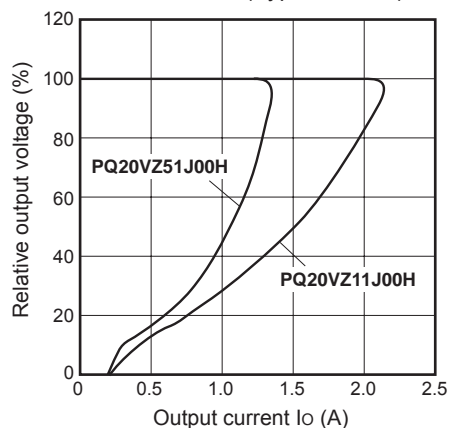


Fig.5 Output Voltage Adjustment Characteristics

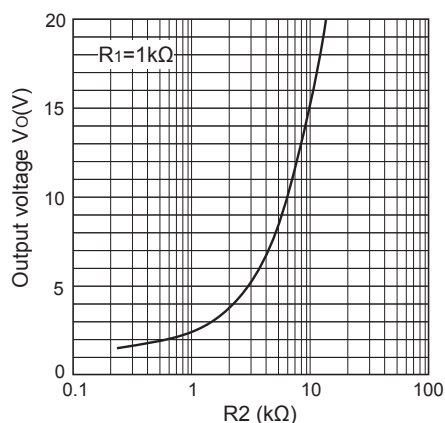


Fig.6 Reference Voltage Deviation vs. Junction Temperature

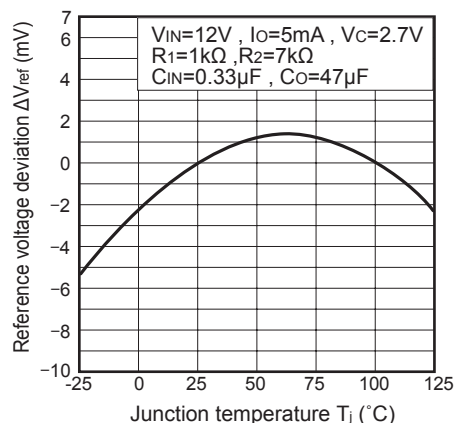


Fig.7 Output Voltage vs. Input Voltage (PQ20VZ51J00H)

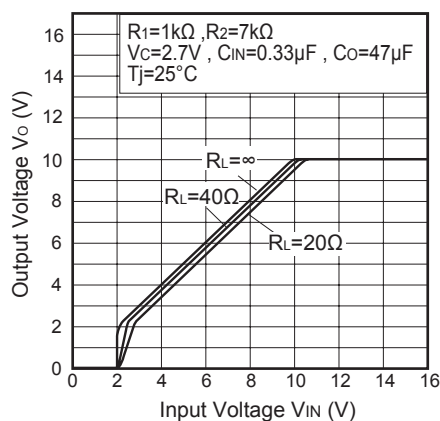


Fig.8 Output Voltage vs. Input Voltage (PQ20VZ11J00H)

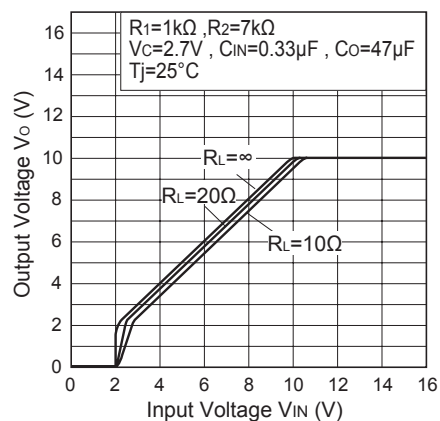


Fig.9 Dropout Voltage vs. Junction Temperature(PQ20VZ51J00H)

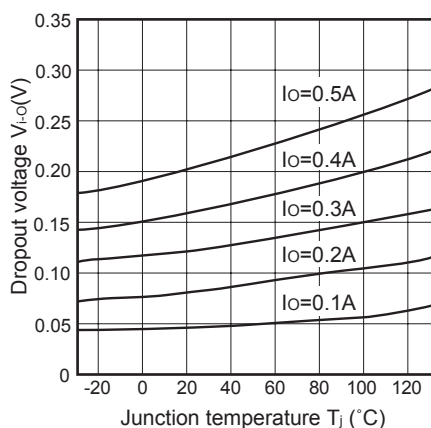


Fig.10 Dropout Voltage vs. Junction Temperature(PQ20VZ11J00H)

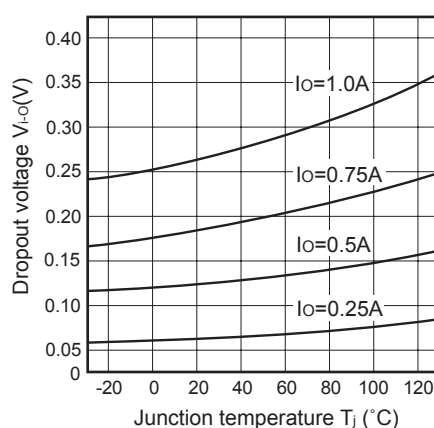


Fig.11 Quiescent Current vs. Junction Temperature

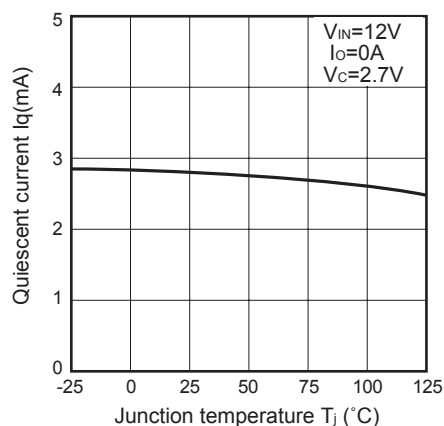


Fig.12 Ripple Rejection vs. Input Ripple Frequency

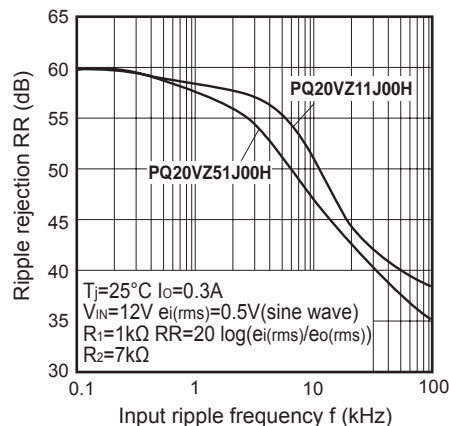


Fig.13 Ripple Rejection vs. Output Current (PQ20VZ51J00H)

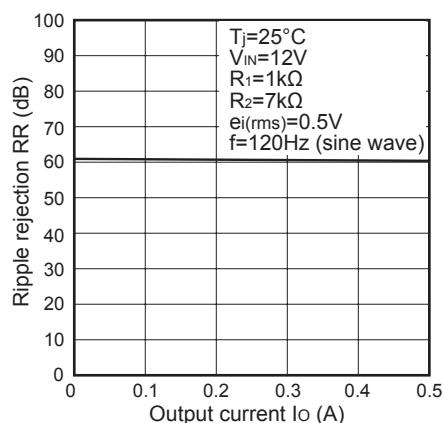


Fig.14 Ripple Rejection vs. Output Current (PQ20VZ11J00H)

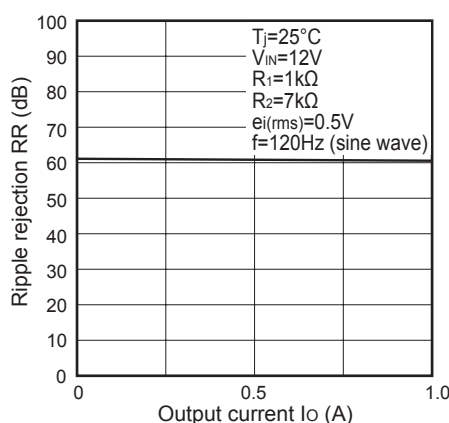


Fig.15 Output Peak Current vs. Dropout Voltage (PQ20VZ51J00H)

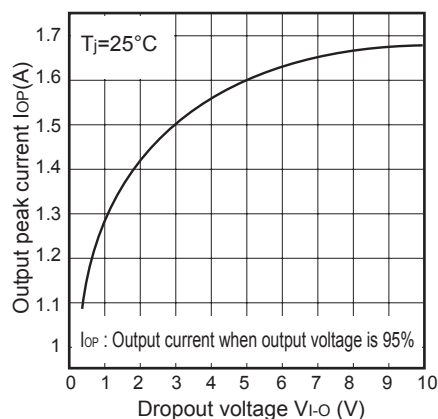


Fig.16 Output Peak Current vs. Dropout Voltage (PQ20VZ11J00H)

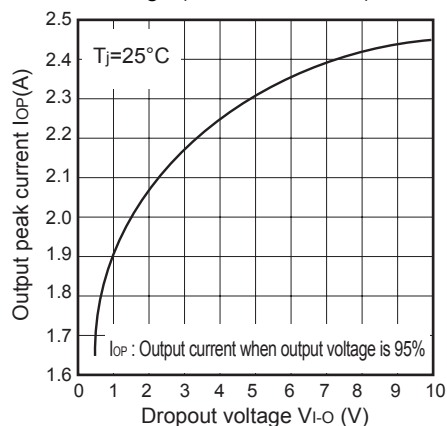


Fig.17 Output Peak Current vs. Junction Temperature (PQ20VZ51J00H)

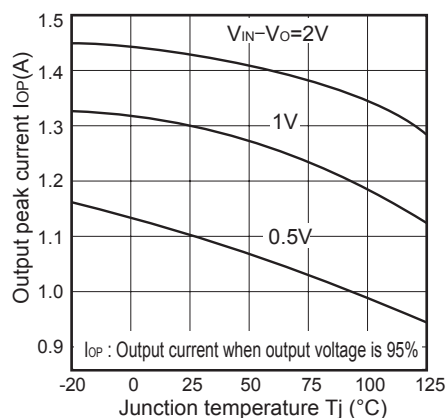


Fig.18 Output Peak Current vs. Junction Temperature (PQ20VZ11J00H)

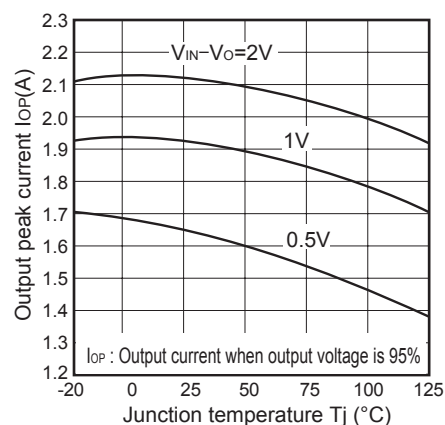
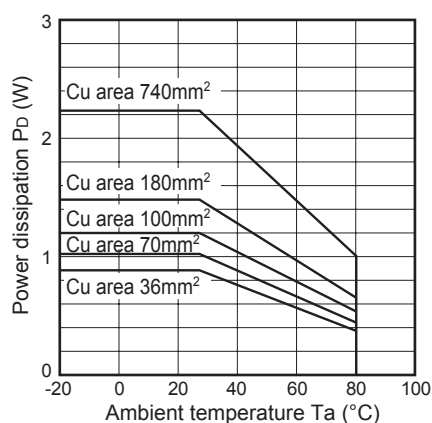
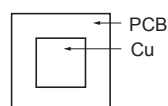


Fig.19 Power Dissipation vs. Ambient Temperature



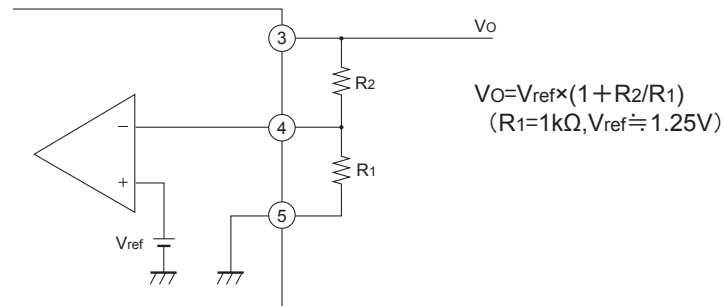
Mounting PCB



Material : Glass-cloth epoxy resin
Size : 50×50×1.6mm
Cu thickness : 35μm

Setting of Output Voltage

Output voltage is able to set from 1.5V to 20V when resistors R_1 and R_2 are attached to ,③、④、⑤ terminals. As for the external resistors to set output voltage, refer to the figure below and Fig.5.



Typical Application

